

STATUS OF CLAIMS

Claims 1 - 17 are pending.

Claims 1 – 17 stand rejected.

Claims 1, 4, 7, 8, 9 and 17 have been amended without prejudice herein.

New Claims 18 – 20 have been added without prejudice herein.

REMARKS

Reconsideration of the subject application is respectfully requested.

Drawings

The drawings stand objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "41" and "45" have both been used to designate the same micropipe in Figure 3. Applicant has amended Figure 3 without prejudice herein to omit reference character 41.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s): numbers 50-55, 53A-55A and 60 in Figures 4A - 4C; in Figure 8C, number 98; and in Figure 9C, numbers 101 and 111. Applicant has amended Figures 4A – 4C to omit the reference numbers 50 - 55, 53A - 55A and 60. Applicant has Figures 8C and 9C without prejudice to omit reference characters 98 and 111, respectively. Applicant has amended the specification to include reference character 101.

Accordingly, Applicant respectfully requests reconsideration and removal of the objections to the drawings.

Specification

The present Office action states the use of the trademark Pyrex has been noted in this application, and should be capitalized wherever it appears and be accompanied by the generic terminology. Applicant has amended paragraphs 5 and 18 of the present specification to refer to "borosilicate glass (Pyrex)".

Applicant has also amended paragraph 25 of the present specification (which includes page 9, line 15 of the original application) to refer to "106A and 104A".

Applicant has also amended paragraph 25 to refer to Pyrex layer 101.

Applicant has also amended the specification to omit reference character 41, which was removed from Figure 3. Applicant has also included a discussion of Figures 4A – 4C in the Detailed Description of the Figures. For purposes of completeness, and by way of non-limiting example only, Applicant submits support for this amendment may be found in paragraph 12 of the original Application. Applicant has further corrected typographical errors within the specification.

Accordingly, Applicant respectfully requests reconsideration and removal of the objections to the specification.

35 U.S.C. 112, Second Paragraph Rejections

Claims 1 - 17 stand rejected pursuant to 35 U.S.C. 112, second paragraph, as containing the trademark/trade name Pyrex. Applicant has amended the claims to omit references to Pyrex and instead recite "borosilicate glass".

Accordingly, Applicant respectfully requests reconsideration and removal of the 35 U.S.C. 112, second paragraph rejections.

35 U.S.C. 102 and 103 Rejections

Claims 1 – 3, 5, 6, 12, 13 and 16 stand rejected under 35 U.S.C. 102(b) as being anticipated by Ashmead (United States Patent No. 5,690,763). Claims 1 – 5, 7, 10 and 13 stand rejected under 35 U.S.C. 102(b) as being anticipated by Folta (United States Patent No. 5,644,395). Claims 1, 4, 11, 12 and 17 stand rejected under 35 U.S.C. 102(b) as being anticipated by Grantham (United States Patent No. 4,467,394). Claims 1, 8 and 9 stand rejected under 35 U.S.C. 102(b) as being anticipated by Little (United States Patent No. 4,392,362). Claims 4, 10 and 16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead. Claims 14 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead in view of Robillard (United States Patent No. 3,984,620). Applicant respectfully requests reconsideration and removal of these rejections for at least the following reasons.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." See, M.P.E.P. §2131 citing Verdegaa Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Analogously, to establish a prima facie case of obviousness, all of the recited claim limitations must be taught or suggested in the prior art. *See, MPEP 2143.03; see also, In re. Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Applicant respectfully submits the cited art fails to teach or suggest each of the recited limitations of Claim 1 – and hence fails to anticipate or render at least Claim 1 unpatentably obvious.

More particularly, amended Claim 1 recites, in part, “[a] miniature reaction chamber template structure for fabrication of nanoscale molecular systems and devices, comprising: ... a layer of borosilicate glass having oxygen ions at a surface thereof and being at least substantially adjacent to said wafer of silicon to form a composite structure.”

Applicant submits this limitation is analogous to original Claim 9, which recited, “[t]he miniature reaction chamber according to claim 8 wherein said field assisted bond creates said oxygen ions in the Pyrex.” Original Claim 9 stands rejected only over Little. Thus Applicant respectfully requests reconsideration and removal of the present rejections to Claim 1 as being anticipated by and/or unpatentable over Ashmead, Folta, Grantham and Robillard, both singularly and in combination.

With regard to Little, Applicant respectfully requests reconsideration and removal of these rejections for at least the following reasons. The Little device is not a miniature reaction chamber template structure, no less a miniature reaction chamber template structure for fabrication of nanoscale molecular systems and devices, as is recited by Claim 1. Instead, Little merely teaches a microminiature cryogenic device for cooling in the milliwatt range. *See, Abstract*. In other words, the Little device is a miniature refrigerator. *See, Abstract*. In further support, Little itself teaches:

Refrigerators as above described are ideal for a wide range of laboratory and like applications. They provide convenient very low temperature economic operation as an alternative to volatile liquid cryogens. They are of small size and low weight enabling them to be used directly on instruments such as microscope stages. The small size enables them to be used to cool very small devices enabling tools or optical instruments to observe or work directly on the device without interference. Small gas consumption enables days of continuous use from a standard pressurized cylinder of gas. Temperature control is simple. The refrigerators are simple

in structure and may be constructed and operated relatively simply and safely. *Col. 11, lines 4 – 17.*

Accordingly, Applicant submits Little fails to anticipate present Claim 1, at least by virtue that it fails to teach “[a] miniature reaction chamber template structure for fabrication of nanoscale molecular systems and devices” – and instead merely teaches a refrigerator. Wherefore, Applicant respectfully requests reconsideration and removal of the present rejections of Claim 1.

Applicant respectfully requests reconsideration and removal of the rejections of Claims 2 – 17 as well, at least by virtue of these Claims’ ultimate dependency upon a patentably distinct base Claim 1.

New Claims 18 - 20

Applicant has added new Claims 18 and 19 without prejudice herein. Applicant submits new Claim 18 recites, in part, “[a]n apparatus for fabricating nanoscale molecular systems, comprising: ... a layer of borosilicate glass being substantially adjacent to said silicon wafer to define a plurality of channels between said borosilicate glass and silicon wafer, said borosilicate glass having dangling bonds at predetermined localized reaction sites.” Accordingly, Applicant respectfully submits Claims 18 and 19 are patentably distinct over the cited art for at least the foregoing reasons.

Applicant has added new Claim 20 without prejudice herein. New Claim 20 recites, in part, “[a]n apparatus for fabricating nanoscale molecular systems, comprising: ... at least one edge protruding into at least one of said channels and being suitable for inducing a localized high electric field.” Applicant respectfully submits this limitation is analogous to original Claim 11, which recites, “[t]he miniature reaction chamber

according to claim 10 further including localized reaction areas positioned in said channels and capable of producing a high electric field wherein a voltage is applied to said structure.” Original Claim 11 stands rejected only over Grantham.

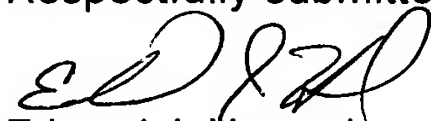
Applicant respectfully submits Grantham fails to teach, or suggest for that matter, each of the limitations of new Claim 20 – in at least that Grantham, like Little, fails to teach or suggest at least “[a]n apparatus for fabricating nanoscale molecular systems”, as is recited by Claim 1. Instead, Grantham merely teaches a pressure transducer. *See, e.g., Title; see, also, Abstract, see, also, col. 1, lines 64 – 67.* Accordingly, Applicant respectfully submits at least Claim 20 is similarly distinguishable over the cited art.

CONCLUSION

Wherefore, Applicant believes he has addressed all outstanding grounds raised in the outstanding Office action, and respectfully submits the present case is in condition for allowance, early notification of which is earnestly solicited.

Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicant's undersigned attorney at his number listed below.

Respectfully submitted,



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In the Drawings:

Please amend the Drawings as follows and without prejudice.

The attached sheets of Drawings include changes to Figures 3, 4A, 4B, 4C, 8C and 9C. These sheets, which include Figures 1 – 3, 4A – 4C, 8A – 8C and 9A – 9C, replace the original sheets including these Figures.

In Figure 3, reference character 41 has been omitted. In Figures 4A – 4C, reference characters 50 – 55, 53A – 55A and 60 have been omitted. In Figure 8C, reference character 98 has been omitted. In Figure 9C reference character 111 has been omitted.

"Annotated Marked-Up Drawings"

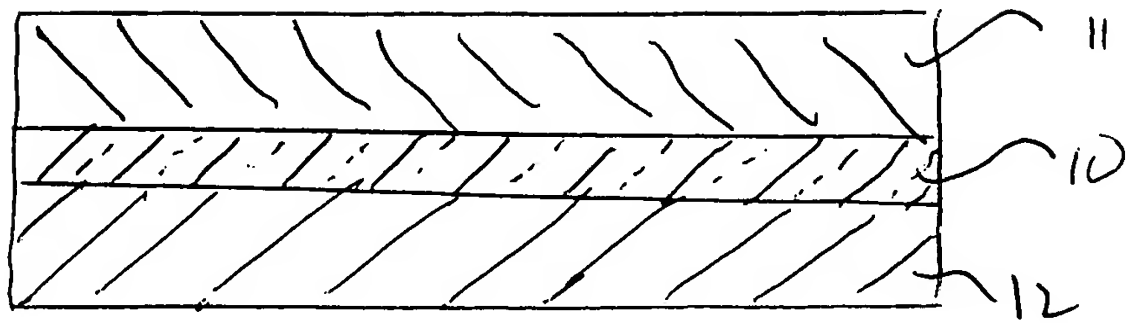


FIG. 1

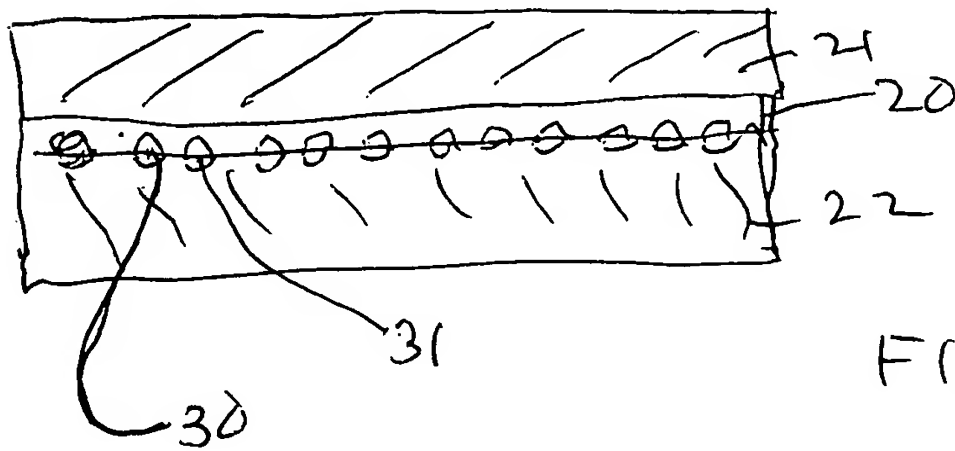


FIG. 2

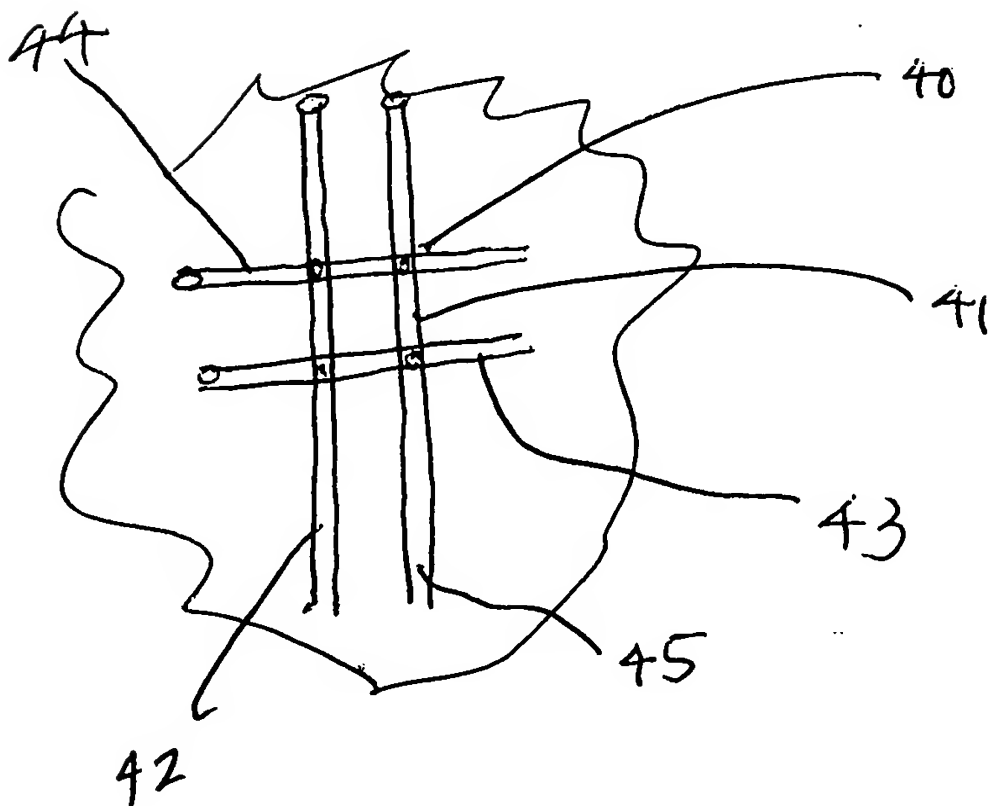
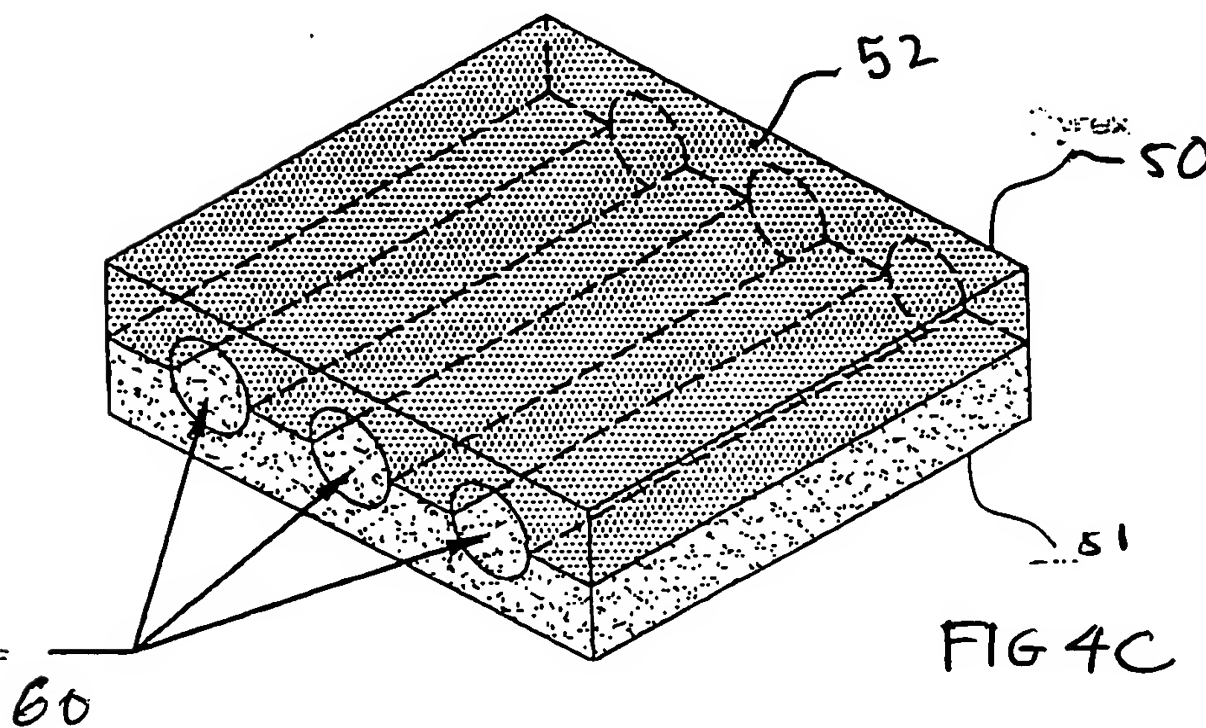
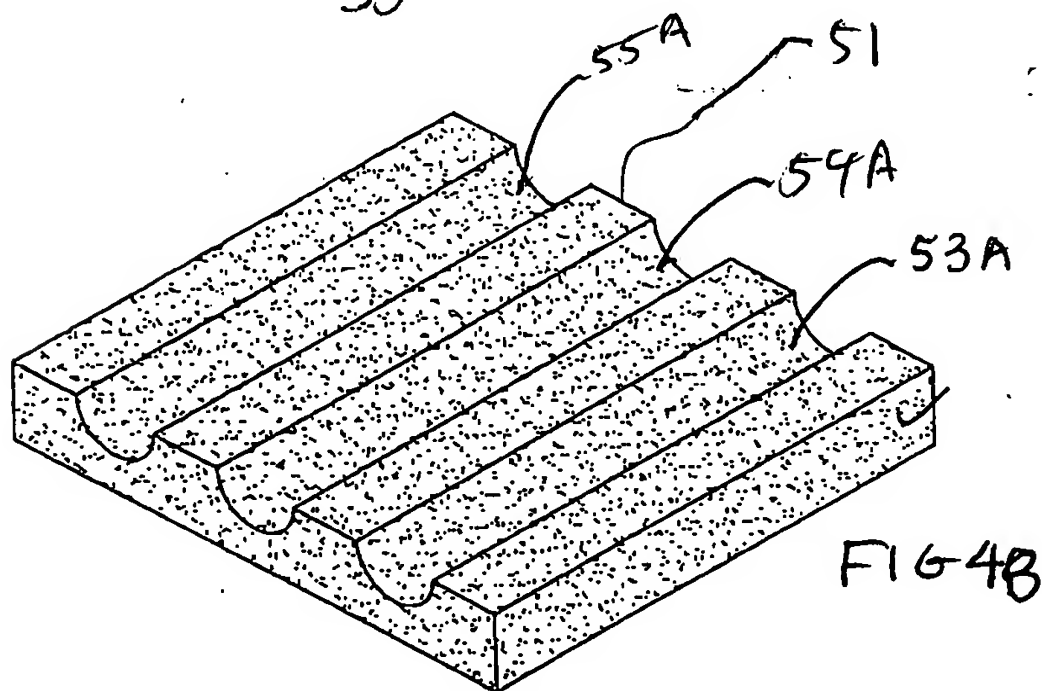
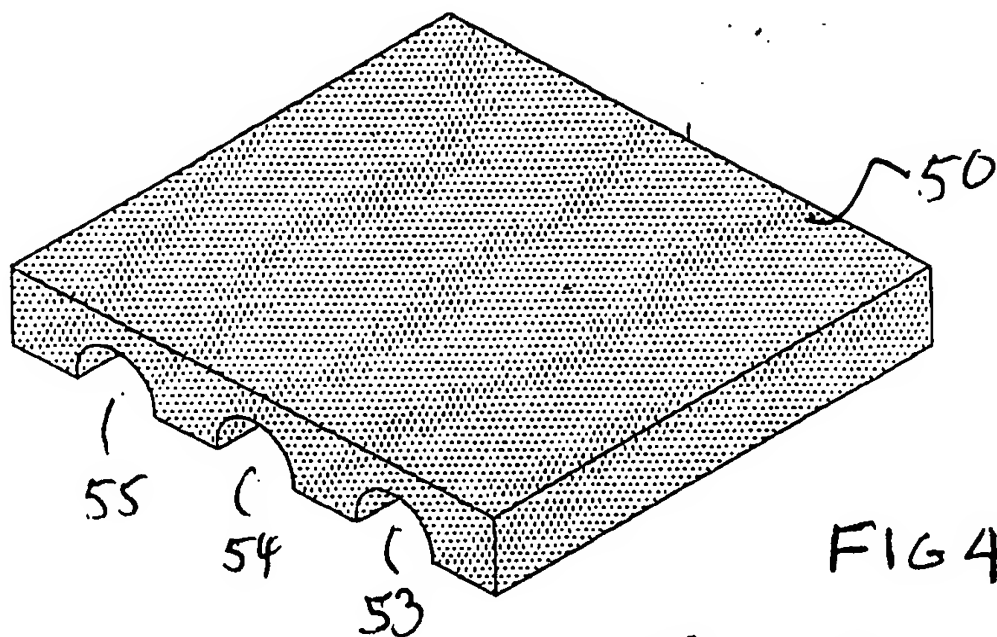


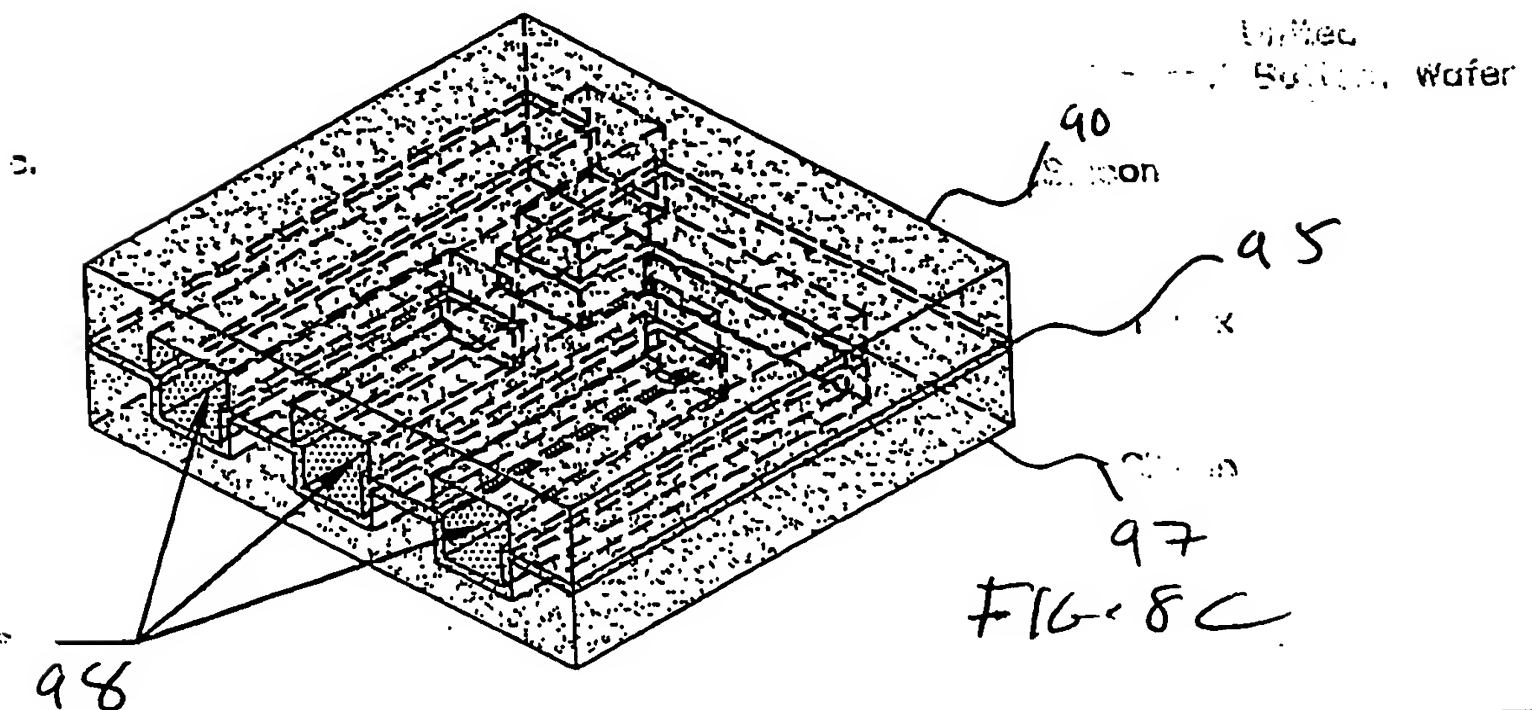
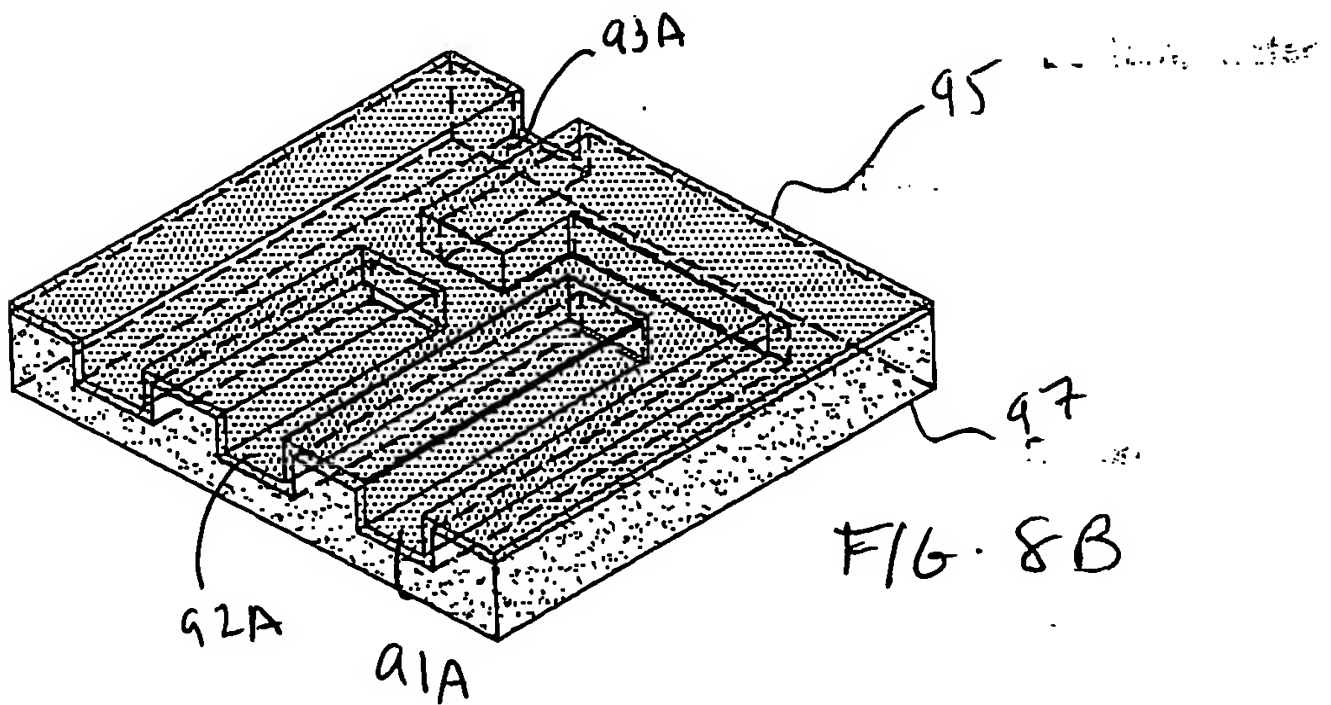
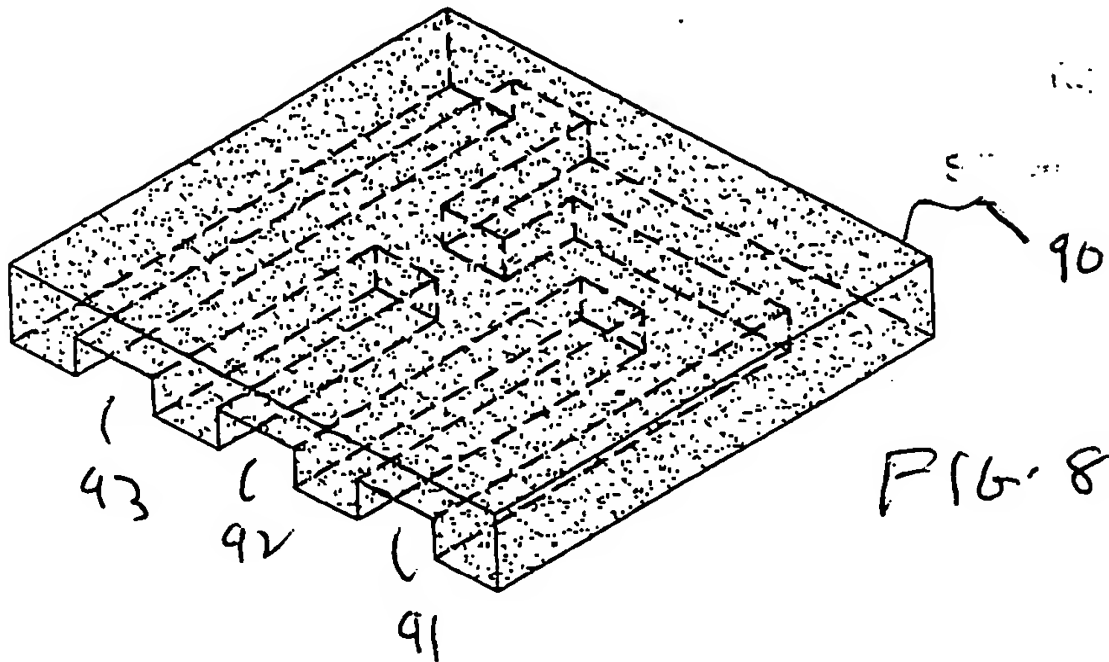
FIG. 3

"Annotated Marked-Up Drawings"



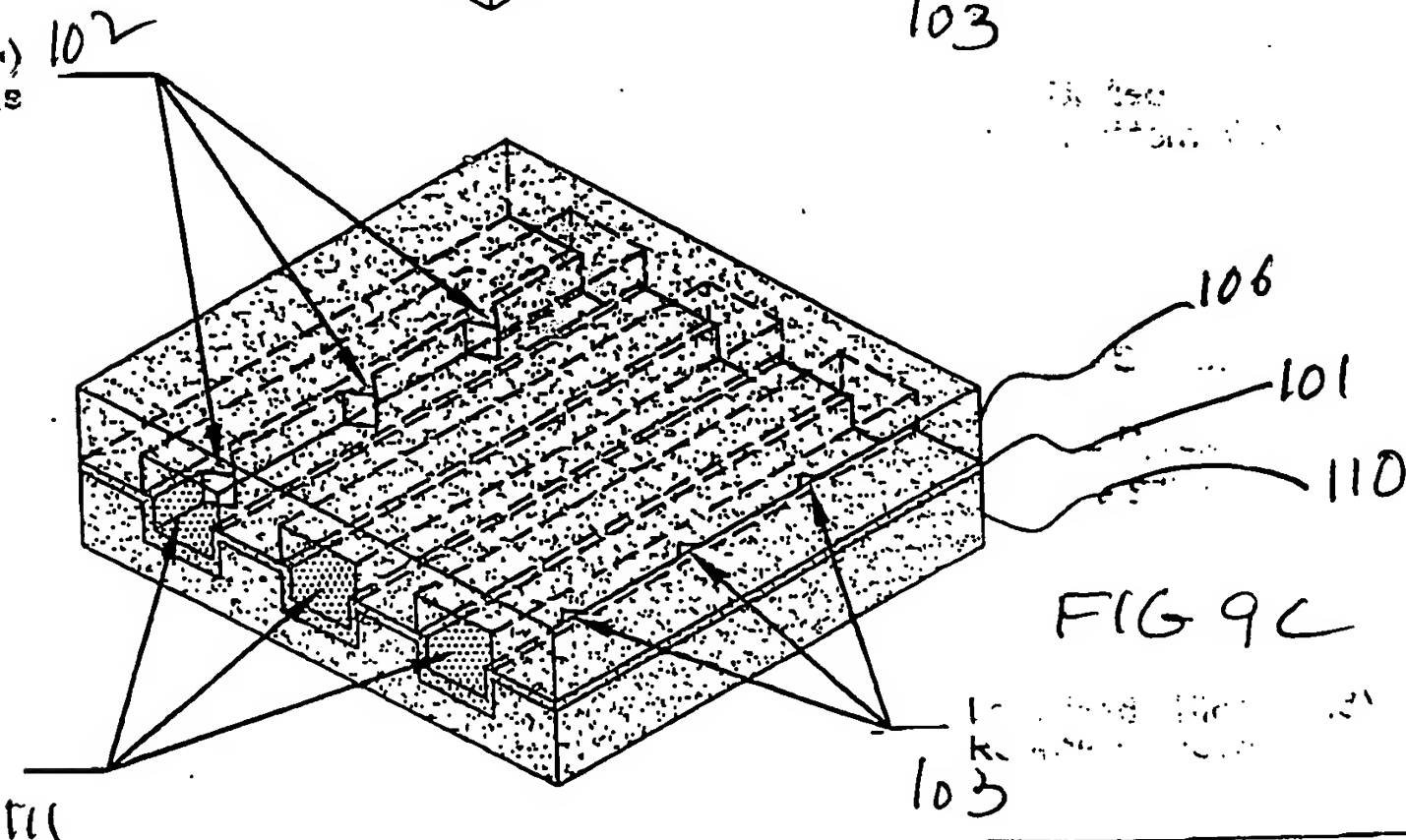
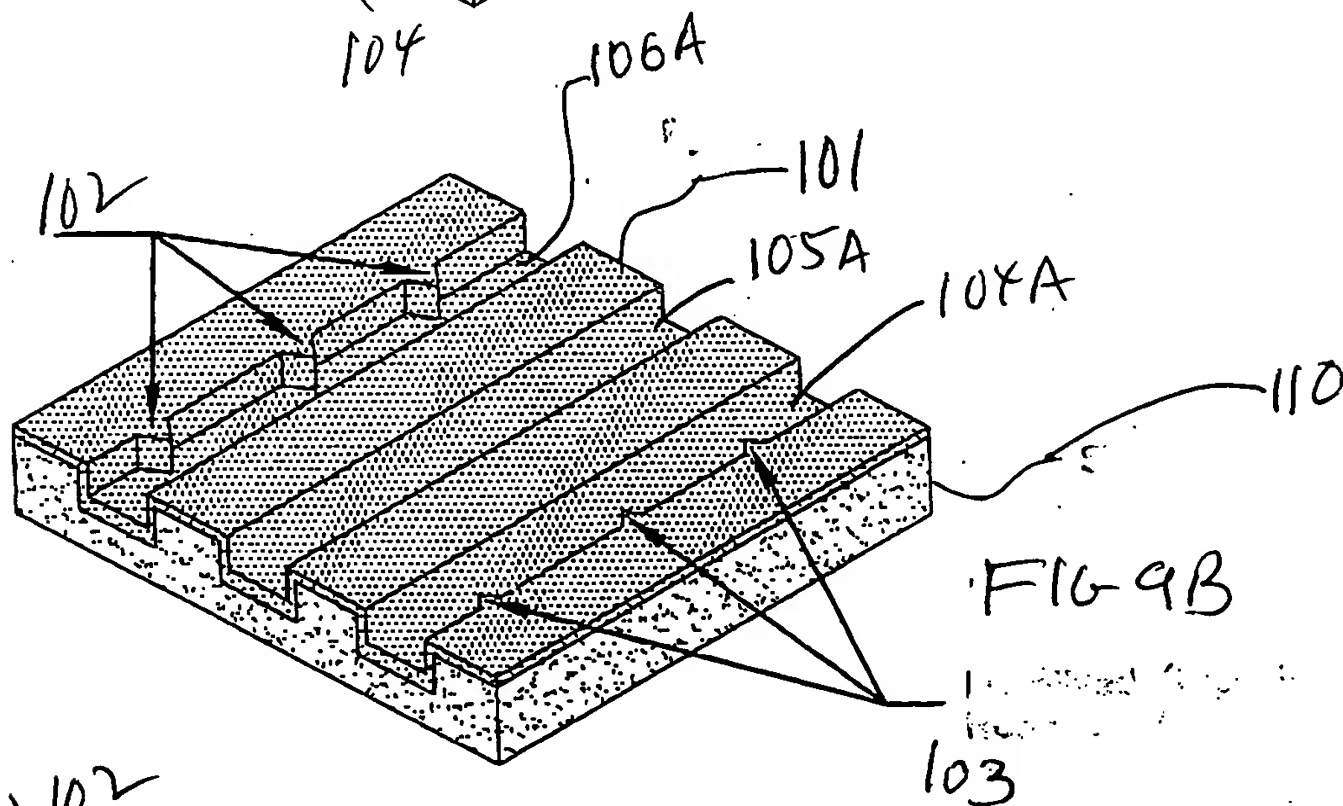
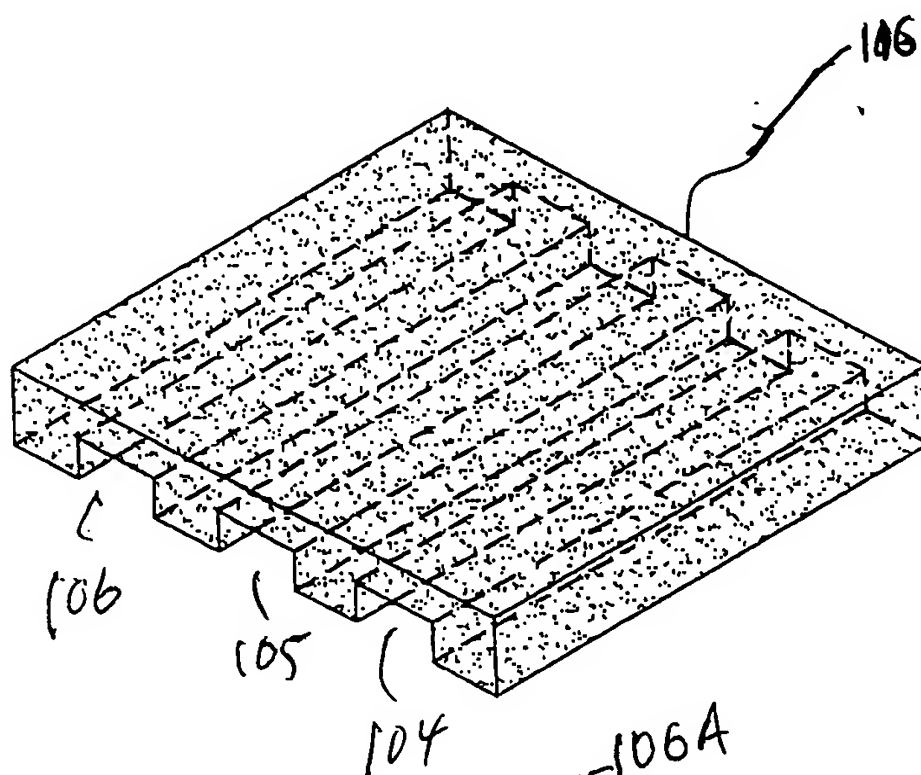
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"Annotated Marked-Up Drawings"



"Annotated Marked-Up Drawings"

FIG. 3



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